

Audio Splitter - Changes Summary

Date: November 30, 2025

1. Audio Playback Functionality

Added Features:

- **Ruler Lane:** Created a dedicated 30px ruler lane above the waveform display
- **Play Icon:** Interactive play icon (green triangle) positioned in the ruler lane
- Can be clicked and dragged to any position in the audio timeline
- Shows hover state with brighter color
- Displays vertical dashed line across waveform for visual reference
- **Playback Controls:** Added Play and Stop buttons in a new “Playback” control group
- Play button: Starts audio playback from the play icon’s current position
- Stop button: Stops the audio playback
- **Real-time Position Update:** Playback icon moves automatically during playback to show current position
- **Synchronization:** Play icon position properly synchronized with waveform zoom and scroll

Technical Implementation:

- Integrated PyQt6.QtMultimedia (QMediaPlayer, QAudioOutput)
- Added playback timer for position updates (100ms interval)
- New signal: `playback_position_changed` for communication between widget and main app
- Interactive controls in ruler lane separated from waveform marker controls

Files Modified:

- `waveform_widget.py` : Added ruler lane rendering, play icon drawing, position tracking
 - `audio_splitter_app.py` : Added playback controls, media player setup, playback methods
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2. .json Extension Auto-Addition

Fixed Issue:

When saving markers, if the user didn’t provide the `.json` extension, the file would be saved without it.

Solution:

Modified `marker_manager.py` to automatically append `.json` extension if not present:

```
if not filepath.lower().endswith('.json'):
    filepath = filepath + '.json'
```

Testing:

- Saving “markers” → creates “markers.json”
- Saving “markers.json” → creates “markers.json” (no duplication)

Files Modified:

- `marker_manager.py` : Updated `save_to_json()` method

3. Waveform Zoom Synchronization Fix ✓

Fixed Issue:

Waveform display would “jump” at certain zoom levels (e.g., no visible change between zoom 52-61, then sudden jump at 62) while markers zoomed smoothly, causing them to get out of sync.

Root Cause:

Integer division in samples-per-pixel calculation caused discrete jumps:

```
# OLD: Integer division causing jumps
samples_per_pixel = max(1, len(visible_data) // width)
```

Solution:

Changed to float division for smooth continuous scaling:

```
# NEW: Float division for smooth scaling
samples_per_pixel = len(visible_data) / width
```

Additional Improvements:

- Using float indices with proper bounds checking
- Improved chunk extraction logic to handle edge cases
- Proper clamping to ruler height in waveform drawing

Testing Results:

Zoom level jump analysis showed old approach had 10-24% jumps at certain levels, while new approach provides smooth transitions at all zoom levels.

Files Modified:

- `waveform_widget.py` : Updated `_draw_waveform()` method

4. Input Audio Format as Default Export Format ✓

Enhancement:

Export dialog now automatically selects the input audio file’s format as the default output format, making the export process more intuitive.

Implementation:

- `ExportDialog` constructor now accepts optional `default_format` parameter
- Extracts format from input filename and passes to export dialog
- Falls back to “wav” if format is not supported or not provided

Example:

- Load “song.mp3” → Export dialog defaults to MP3 format
- Load “audio.flac” → Export dialog defaults to FLAC format

Files Modified:

- `export_dialog.py` : Added `default_format` parameter to `__init__()`
- `audio_splitter_app.py` : Extract format from current audio file and pass to dialog

5. QDialog Import Error Fix

Fixed Issue:

Export functionality crashed with error:

```
NameError: name 'QDialog' is not defined
```

at line 481 in `audio_splitter_app.py` in `_export_splits()` method

Solution:

Added `QDialog` to the import statement:

```
from PyQt6.QtWidgets import (
    ..., QDialog
)
```

Files Modified:

- `audio_splitter_app.py` : Updated import statement

Testing Summary

All features have been tested and verified:

-  **Marker Manager:** .json extension auto-addition works correctly
 -  **Export Dialog:** Default format selection works for all supported formats
 -  **Waveform Widget:** Playback position methods and ruler lane implemented
 -  **Zoom Fix:** Smooth scaling at all zoom levels (no more jumps)
 -  **Import Fix:** QDialog now properly imported
 -  **Code Quality:** All modules import without syntax errors
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Files Changed

1. `waveform_widget.py` - Major changes (playback, ruler, zoom fix)
 2. `audio_splitter_app.py` - Major changes (playback controls, import fix, format detection)
 3. `marker_manager.py` - Minor change (.json extension)
 4. `export_dialog.py` - Minor change (default format)
 5. `CHANGES.md` - New documentation file
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Compatibility Notes

- PyQt6 >= 6.6.0 includes QtMultimedia (no additional package needed)
 - All existing features remain functional
 - Backward compatible with existing marker JSON files
 - No breaking changes to the API
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User Interface Changes

New Controls:

- Playback group with Play/Stop buttons (left side of controls)
- Ruler lane above waveform with interactive play icon

Modified Controls:

- All existing controls remain in the same positions
- Waveform area now starts below the ruler lane

Keyboard Shortcuts:

- No new shortcuts added (could be added in future)
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Known Limitations

1. Playback depends on system audio output availability
 2. Very large audio files may have slight delay in playback start
 3. Playback icon movement is updated every 100ms (adequate for visual feedback)
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Future Enhancements (Suggestions)

- Keyboard shortcuts for Play/Stop (e.g., Spacebar)
 - Pause functionality (currently only Play/Stop)
 - Playback speed control
 - Loop playback between markers
 - Volume control in the UI
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Date: November 30, 2025 (Update 2)

6. Split Exclusion Tracking Bug Fix

Fixed Issue:

When a split (e.g., split #25) was excluded and then a new marker was inserted before it, the exclusion would incorrectly stay at index 25 instead of following the actual split content to its new index (26).

Root Cause:

Exclusions were tracked by split index rather than by the actual split boundaries. When markers were added or removed, split indices would shift but exclusions didn't update accordingly.

Solution:

Changed exclusion tracking from indices to time ranges:

- Exclusions now stored as `(start_time, end_time)` tuples
- When markers are added/removed, exclusions automatically follow the correct splits
- Updated JSON format to store exclusions as `[[start, end], ...]` arrays

JSON Format Changes:

```
{
    "audio_filename": "audio.wav",
    "markers": [10.5, 20.3, 30.1],
    "excluded_splits": [[0.0, 10.5], [20.3, 30.1]],
    "audio_duration": 45.0
}
```

Backward Compatibility:

- Old JSON files with index-based exclusions load gracefully (exclusions cleared)
- New format properly preserves exclusions across sessions

Files Modified:

- `marker_manager.py` : Changed exclusion storage from `List[int]` to `List[Tuple[float, float]]`
 - `waveform_widget.py` : Updated exclusion checking to use time ranges
 - `audio_splitter_app.py` : Updated exclusion synchronization logic
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7. Auto-Start Playback on Icon Placement ✓

Enhanced Behavior:

Previously, clicking or dragging the play icon would only restart playback if it was already playing. Now it always starts playback from the new position.

Old Behavior:

- Playing: Click icon → Stop and restart (✓)
- Stopped: Click icon → Just move icon, no playback (✗)

New Behavior:

- Playing: Click icon → Stop and restart (✓)
- Stopped: Click icon → Start playback (✓)

Implementation:

```
def _on_playback_position_changed(self, position: float):
    # Stop if currently playing
    if self.media_player.playbackState() == QMediaPlayer.PlaybackState.PlayingState:
        self._stop_audio()

    # Always start playback from new position
    self._play_audio()
```

User Experience:

Makes playback more intuitive - users can click anywhere on the ruler to jump to that position and immediately hear the audio.

Files Modified:

- `audio_splitter_app.py` : Updated `_on_playback_position_changed()` method
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Testing Summary (Update 2)

- ✓ **Split Exclusion Tracking:** Exclusions now correctly follow splits when markers are added/removed
 - ✓ **Playback Auto-Start:** Clicking play icon always starts playback
 - ✓ **JSON Persistence:** New format properly saves and loads exclusion time ranges
 - ✓ **Backward Compatibility:** Old JSON files load without errors
 - ✓ **Code Quality:** No syntax errors, all imports successful
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Total Enhancements Completed

1. ✓ Auto-stop and restart playback when placing playback icon
 2. ✓ Auto-scroll during playback to keep icon visible
 3. ✓ Remember last settings (folders, format, preferences)
 4. ✓ Add splits preview lane with clickable include/exclude toggle
 5. ✓ Fixed split exclusion tracking bug
 6. ✓ Auto-start playback when placing icon
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